

# **IRRIGATION ARRANGEMENTS IN PENDER & NEW HANOVER COUNTIES, NORTH CAROLINA**

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IRRIGATION ARRANGEMENTS IN  
PENDER AND NEW HANOVER  
COUNTIES, NORTH CAROLINA

A Report of an Irrigation Survey in  
Pender and New Hanover Counties,  
Conducted in the Summer of 1963

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Assisted by a grant from the  
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## Introduction

This is one of a group of reports of irrigation surveys made in the summer of 1962 covering eleven North Carolina counties. The surveys are part of a research project concerning arrangements by water users in selected areas of North Carolina to secure water sources. Conducting the surveys was James E. Martin, Jr., currently a second-year law student at the University of North Carolina, under the supervision of Milton S. Heath, Jr.\*

Briefly, the purpose of the irrigation surveys is to examine and analyze the following factors:

- .The nature and magnitude of farm irrigation in selected areas.
- .The types of crops irrigated.
- .The sources of water used.
- .The legal arrangements made by the irrigators to secure their sources of water, including purchase of land or water rights, agreements among irrigators and other water users concerning water use, permits required, etc.
- .Any disputes that may have arisen over sources of water affecting these irrigators, and the outcome of the disputes.

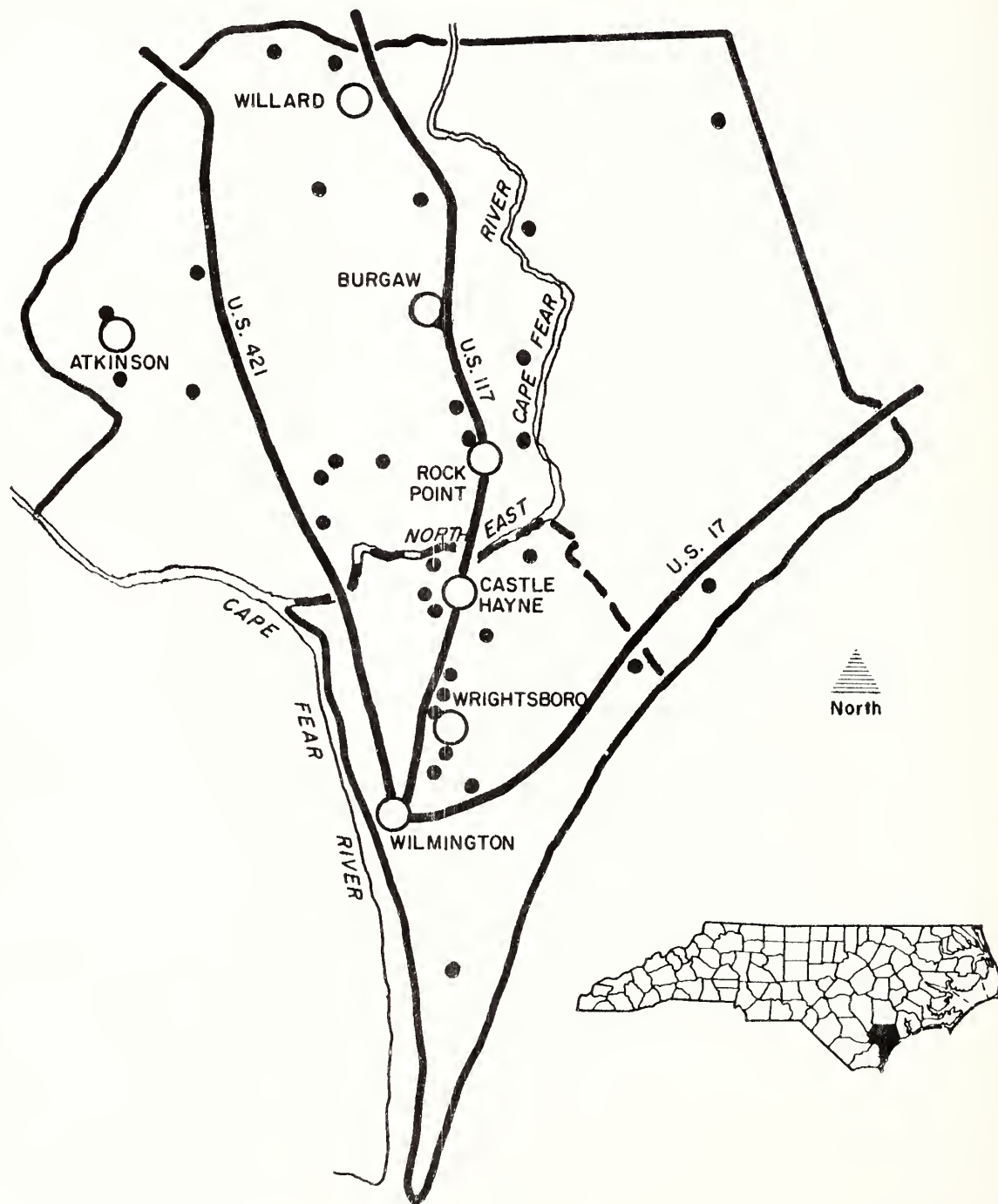
With this and other information developed through the research project, it is hoped that an accurate evaluation can be made of the operation of the existing structure of laws and political institutions affecting water use, of its weaknesses and strengths, and of its impact on water resource development.

The procedures followed in this survey are described in detail by Water Resource Paper No. 2. Briefly, the known irrigators were identified with the assistance of county agents and Soil Conservation Service personnel, and then were personally interviewed. A prepared questionnaire was used as a point of departure for the interviews.

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\*Water Resource Paper No. 1 contains a description of the over-all research project. Water Resource Paper No. 2 summarizes the 1962 irrigation surveys and reviews the procedures followed on the surveys.

# IRRIGATION IN PENDER-NEW HANOVER COUNTIES



**Key:**

- REPRESENTS AN ACTIVE IRRIGATOR WHO WAS CONTACTED IN THIS SURVEY DURING THE SUMMER OF 1962.



General Review of Irrigation in Pender  
and New Hanover Counties

The report covering irrigation in Pender and New Hanover Counties is combined because most of the active irrigators in the area are located along the New Hanover-Pender county line. (See map at page 3). Much of New Hanover County is devoted to residential or industrial use, with farming being concentrated across the northern portion of the county adjacent to Pender County. Pender County's irrigation is scattered largely in the southwestern half of the county; the northeastern half of the county is swampland designated as a game preserve.

In both New Hanover and Pender Counties there is tobacco irrigation, but not on the scale that may be found in other areas. The biggest irrigators in the area are flower growers and blueberry farmers. In cultivation of both crops irrigation systems are used as a water source during dry periods and as a farming practice; also, to protect crops during or when there is a threat of freezing weather. Water is continually sprinkled on the crops forming a thin coating of ice, which serves as an insulator. While this coating is maintained the temperature is held at 32°F, which is not damaging, while temperatures of 28°F or less bring serious damage. Another rather unusual application of irrigation here is to protect certain flower crops from the sun which under extreme conditions imposes a hazard to the actual flower.

The sources of water available for irrigation in these counties offer a cross section of irrigation water sources used in North Carolina. A water table which in many areas is within ten to twelve feet of the earth's surface allows widespread use of both wells and dug ponds. Streams and branch or spring fed ponds are frequently used. Thus in this area are found examples of most of the sources of North Carolina's irrigation waters: branch or spring fed ponds, streams, dug ponds, and wells.

The dug pond, as the name implies, is a hole dug in the earth's surface which, when filled with water, becomes a pond. The sources of water for filling the hole are varied. In some instances the dug pond is similar to the dry or surface pond of the Piedmont which merely



collects surface waters. It is also employed near streams so that as water is needed the stream's flow can be diverted and stored; this practice is also used in the Piedmont. It can likewise be used as a reservoir for water pumped from one of the many wells found in the area. Typically in Pender and New Hanover, though, a hole is excavated down to the water table; water then seeps to the surface and fills the pond. The dug pond and the well as prime sources of irrigation waters are peculiar to the Coastal Plain.

A few irrigators in the area irrigate from the familiar branch or spring fed pond which is the predominant source of water in the Piedmont; others use waters from the many streams and rivers which flow abundantly through the area, commonly in the tidewater area.

Due to the flat terrain and to the fifty inch average annual rainfall in the area, there are many swampy areas unsuitable for cultivation and farms with serious drainage problems. To meet these problems drainage systems have been built involving canals and ditches. On some farms the drainage canals can be closed and act as a reservoir for irrigation water.

As indicated in the summarized results of the survey which follows, we found no evidence in this area of disputes over water use involving irrigation nor any indication that irrigators have found it necessary to purchase water rights or riparian land in order to secure sources of irrigation water.

#### Summarized Results of Survey

##### 1. Extent of coverage

Suggested list of irrigators (SCS Unit Conservationist and County Extension Chairman)--31

Farms reporting irrigation in 1959 U. S. Census of Agriculture--59

Persons contacted, including other than those suggested--30

Active irrigators contacted--28

Estimated irrigators in New Hanover and Pender Counties (authors' estimate)--50

##### 2. Time required for conduct of survey in Pender and New Hanover Counties

2-1/2 days for interviewing irrigators and others



### 3. Water sources

Ponds--19

Excavated Ponds--13

Continuous Flow Ponds--6

Streams--7

Wells--13

Combination of Sources (ponds, streams, wells)--11

Note: The information concerning water sources including the classification of types of ponds, was derived from the irrigators themselves, not from personal inspection by the authors. An explanation of the terminology used here--e.g., "continuous flow ponds"--will be found in U.N.C. Water Resource Paper No. 2.

### 4. Types of crops

Tobacco (11) farms

Largest farm--28 acres

Smallest farm--2 acres

Average farm--9 acres

Flowers (12) farms

Largest farm--83 acres

Smallest farm--2 acres

Average farm--30 acres

Blueberries--(1 farm--45 acres) Only one blueberry farmer was available; the two others suggested were apparently on vacation.

Truck (5 farms: 4, 10, 15, 2, 50 acres respectively)

It should be noted that the figures given above reflect the acreage irrigated and not necessarily the actual acreage of the respective farms.

### 5. Water usage

There are no reliable data available concerning the amount of water used for irrigation in the area and no mechanical measuring devices are in use. (See Water Resource Paper No. 2 for further comment.)

### 6. Expansion

No expansion planned--21

Expansion planned (all persons reporting planned expansion were either raising flowers or in the nursery business)--6

### 7. Disputes over water, etc.

None reported

### 8. Purchase of water rights or agreements concerning irrigation

None were reported other than a general custom or understanding that leased or rented land included water rights to the extent that the owner held them.





9. Acquisition of riparian lands, easements, etc.

None were reported other than in the respect that land is not purchased or leased without some source of water being available.

10. Recent irrigation trends

Recent droughts have not affected irrigation practices since this area apparently is generally not affected to the extent that the Piedmont and Mountain areas are. Irrigation as a trend did not seem to be appreciably on the increase due to the abundant rainfall. Flower growers were an exception since their crops cannot stand even a short drought whereas tobacco growers can.

Acknowledgments

SCS Unit Conservationist John Yates and Pender County Extension Chairman J. N. Honeycutt gave us invaluable help in identifying and locating irrigators. We are very grateful to them and to State Conservationist Richard M. Dailey and Howard Ellis of the State College Department of Engineering Extension for their usual generous co-operation.

The map at page 3 was prepared by Charles Nakamura of the Institute of Government.





